average compensation would decrease attrition among low-quality experienced teachers. In addition, alternative certification channels should be widened, so that good students (or professionals in another field interested in a second career) can enter teaching at a lower cost.

The authors think that, under the existing organization of public schools, there is little likelihood any of these reforms will be pursued seriously enough to raise teacher quality substantially. They anticipate effective opposition from teachers' unions, schools of education (which have an enormous stake in conventional certification channels), and from associations of school administrators. They argue that reforms will be pursued seriously only when schools are under more substantial pressure to improve educational outcomes, and that this pressure will only be created by much broader reforms—ones that raise substantially the proportion of schools in a district that must compete for students.

Overall, *Teacher Pay and Teacher Quality* is a fine book. Its authors analyze data on teacher salaries and teacher quality in a thorough, careful way. They make a convincing case for the proposition that rising relative salaries have not contributed to improvements in teacher quality. They also present a convincing analysis of how that result came about. The book would be stronger with two changes. First, it needs more careful editing. It is sometimes difficult to tell what years of data a table includes. Means and standard deviations are not provided for some variables included in linear regression results presented. Discussions of some issues include irrelevant material. Second, it needs more discussion of the relationship between the cognitive ability of a teacher and educational outcomes. The book presents convincing evidence that higher cognitive abilities on the part of teachers lead to better educational outcomes, but it does not discuss the strength of that relationship. Some analysts, including Eric Hanushek, argue that the relationship is quite weak. If that is so, then policies to carefully screen teachers after they begin to teach might be much more productive than policies that focus attention on the qualifications of applicants before they have taught.

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Measuring What People Know: human capital accounting for the knowledge economy

R. MILLER, 1996
Paris, Organisation for Economic Co-Operation and Development
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With only the rarest exceptions, knowledge assets are left off corporate balance sheets. Human-capital formation appears in the profit and loss account only in the partial and seriously misleading form of purchased off-the-job training and expenditures in the training department, if a company has one. Most government accounting systems still treat human-resource programmes as consumption expenditures. Therefore, corporate and public policy makers normally take their decisions about investing in people in considerable ignorance or on the basis of misinformation.

As the knowledge economy emerges out of the husk of the machine- and finance-based manufacturing economy, the investment and policy communities and managers are brought up against this massive information deficit. Riel Miller focuses his book tightly on one of the most intractable but critical areas of the deficit, measuring what people know. Drawing on economics, accounting and education, he reviews some of the measures and analytical tools which firms and governments are developing to record and to evaluate knowledge assets acquired through experience as well as through education and training.

Three of the book's seven chapters are a bold attempt to sketch out a theoretical framework within which to evaluate these measures. The focus is on the role of information about human productive capacity in decisions about its acquisition and use. In turn, this leads into a consideration of ways in which human-embodied knowledge is measured and valued in labour and capital markets. As ground-clearing, preliminary modelling and a mapping of relationships, this is a useful exercise. But Miller scrupulously avoids taking any position on the dynamics of investment choice. This is a severe limitation because definition of relevant information depends ultimately on the model of choice. Think only of the different information requirements of neo-classical, satisficing and neo-Austrian models of investment choice.

The remaining four chapters address specific efforts to improve the range and quality of implicit and explicit signals and contracts which influence post-school investments in people. The author situates financial accounting and reporting practices, training and labour-force qualifications within the context of human-capital information and decision-making systems (Chapter 4). In Chapter 5, he assesses the obstacles to better accounting and reporting of training and labour-force qualifications. Then he offers examples (Chapter 6) of initiatives in OECD countries to improve all these practices and illustrates the potential gains to policy makers from such improvements.

It is arguable that the quality and interpretation of labour-market signals, such as employment, turnover rates and incomes, are at least as critical as financial reporting to informing decisions about human-capital formation. But within his chosen focus, the author provides a penetrating analysis of the origins and nature of the current misinformation systems on training costs and labour-force qualifications.

Some accountants argue that human capital cannot be treated as an asset because one of the defining characteristics of an asset is that it is objectively measurable. This can mean that there must be an active open market whose values can be borrowed, and for many intangibles, including some human-capital formation, this is not the case. Or it can mean that accountants believe that there is such a thing as objective costing, which involves equating price and value. It is a pity that Miller skirts round this issue.

However, Miller does take great pains to identify obstacles to making human capital measurable in terms of the output potential of specific competences, ensuring that returns on the investment can be appropriated by the investor, establishing its initial price, and all with sufficient reliability for capital and labour markets to accept the ensuing estimates of output potential. Inevitably, he is concerned about the very serious inaccuracy of wages as rental prices for human capital; the more so because, unlike physical capital, no asset prices are available for human capital.

Throughout the book, the author remains admirably frank. He admits that without explicit recognition of output potential, the task of introducing more effective market mechanisms for an almost-phantom asset 'seems almost impossible'. One ground for his optimism is recent national initiatives to introduce competence-based assessment geared to the needs of production rather than those of the education establishment. These are Australia's initiative to introduce national competence standards, Canada's introduction of official prior learning assessment and standard setting, France's introduction of Assessment Centres and the UK's introduction of National Vocational Qualifications. At least these initiatives may indicate that it is possible to evaluate objectively the output potential of acquired competences with a degree of validity and reliability sufficient for the information to be better than no information at all.

Wages are a continuing problem because they reflect not only the cost of investing in competences, but also effort and scarcity. That competence involves will as well as knowledge is one of the key traits which distinguish human from physical capital. Market recognition is limited to the knowledge component, even if will is assessed very indirectly through its role in knowledge building. What can be delivered is better measurement and recognition of the knowledge preconditions of delivered competence. Miller believes that the institutional and regulatory innovations which he illustrates 'add up to a potentially powerful new approach towards facilitating structural economic change' (p. 58).

Miller himself points out that these reforms are, as yet, modest in scope. To succeed in providing new signals, reforms in market recognition have to be accepted by firms when fixing wages and by banks in making decisions about lending to potential investors in human capital. Governments can help by introducing regulatory and institutional frameworks which reduce transaction costs for individuals and firms who are investing or trading in competences, and reduce information costs for lenders and investors on financial capital markets. Miller also suggests that governments put their own house in order, following the example of the New Zealand government. At minimum, they might move from cash to accrual accounting methods and to recognition of human capital investments as a distinct economic category.

The measures available today often do not make functional sense for investors, lenders, public decision-makers and managers. In bravely attempting to map such a difficult field and to evaluate recent initiatives, Riel Miller has also demonstrated how much remains to be done, theoretically as well as empirically, if the information base is to be of real value to those who are currently flying blind into the knowledge economy.

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Maastricht, University of Limburg.
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